



ASTP RUSSIAN LANGUAGE CLASS — Two members of the American crew of the joint U.S.-USSR Apollo-Soyuz Test Project receive instruction in the Russian language during ASTP activity at JSC. They are Astronauts Donald K. Slayton (left), docking module pilot, and Thomas P. Stafford, commander. The instructor is Ms. Nina Horner.

Language Barriers Expected To Be Absent During ASTP

Perhaps one doesn't need to know the language in matters of love and samba dancing, but when spacecraft of two nations meet in orbit it becomes essential that the crews understand each other.

Any language barrier that may have existed previously will be absent when a United States Apollo spacecraft docks with a Soviet Union Soyuz spacecraft high above Europe on July 17. The Apollo crew will be proficient in Russian and the Soyuz crew will be fluent in English.

The language barrier will be down also in Mission Control Centers in Houston and Moscow as bilingual interpreters do near-simultaneous interpretation of spacecraft-to-spacecraft radio communications as well as conversations between flight directors in the two control centers.

From the outset of Apollo-Soyuz planning, there has been none of the "let-'em-learn-English" mentality. The differences between Germanic English and Slavic Russian were recognized early as potential stumbling blocks to efficient planning and operations for the joint space flight.

Nicholas Timacheff joined the ASTP staff at NASA's JSC early in 1973 and tackled the task of or-

ganizing the people and resources needed for hurdling the language barrier. Paris-born son of pre-revolution Russian emigres, Timacheff supervises the staff of interpreters, translators and crew language instructors at the Center. He speaks four languages in addition to Russian.

Of the 21 bilingual interpreters on Timacheff's staff, 10 were born in the Soviet Union and the rest are either of second or third generation Russian descent or are non-Russians who have learned the language to a high level of fluency. Regional dialects have posed no problems to the interpreters, who range from housewives to college professors.

The interpreters adapted rapidly to the world of Space-Speak. "There were no problems at all in adjusting to the technical vocabulary we use in the space business," said Timacheff.

"The Russian language proselytes technical words from English, German and French, so, many of the words — like *giroskop*, *raketa*, *telemetria* and *navigatzia* — are immediately recognizable."

The apparent complexity of Russian grammar, coupled with the proselyting of technological vocabulary from other languages,

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ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



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Hurricane Plan Ready If Needed

The Hurricane Season is practically upon us again (June 1-November 1) and JSC has a Hurricane Plan ready for implementation if required.

Developed and managed by the Center Operations Directorate, the JSC Hurricane Plan is updated every year to assure that current site conditions and missions are considered in identifying required protective measures.

In general, when a hurricane poses a threat to the site, all non-essential activities are discontinued, and all personnel not involved in hurricane preparations are evacu-

Canada To Develop RMS For Shuttle

Canada will develop at its own expense the remote manipulator system (RMS) for NASA's Space Shuttle. The system allows astronauts inside the Space Shuttle Orbiter to deploy or retrieve payloads in space.

Canada will fund the development of the RMS and will provide the first flight unit to NASA without charge. Cost for the development of the RMS and delivery of the first flight unit has been estimated at \$30 million.

Canada will supply flight units for outfitting the follow-on orbiters. Costs to the U.S. for these units will not include any charge for Canada's research and development.

Canada will deliver the first flight unit in 1979 for use on early Shuttle orbital flights, scheduled to begin in mid-1979.

This arrangement with Canada parallels the one with the European Space Agency under which the Spacelab is being developed with European funds for use on the Space Shuttle.

According to Dr. James C. Fletcher, NASA Administrator, "This is another example of sharing the costs of space programs by the participation of other Countries and will result in a savings of \$20 to \$30 million to U.S. taxpayers.

ated, except during a manned flight mission when personnel involved in critical mission activities would continue their duties.

Starting with the identification of a tropical disturbance which may eventually threaten this area, Center Operations will obtain the latest weather advisories as they are is-

sued. This information is used in deciding what specific protective measures should be taken.

The Center Director decides when employees should be dismissed in a storm situation. If the hurricane directly threatens JSC, a Hurricane Command Post is acti-

(Continued on page 4)

Goals of FWP Emphasized

During the Federal Women's Day Program — "Space For Women" — held last week at JSC, much emphasis was placed on the Federal Women's Program (FWP).

"FWP was not designed to force a woman to work if she doesn't want to. We're simply trying to provide equal opportunities for those women who want or need to work," commented Dr. Harriet Jenkins, one of the keynote speakers. Dr. Jenkins is Assistant Administrator of Equal Opportunity Programs, NASA Headquarters.

She added that some of the primary thrusts of FWP are to develop career systems including career counseling and development; to encourage upward mobility; to emphasize training opportunities;

and to eliminate dead-end jobs.

"While we have started doing some of these things, there is still much to be done. A concerted effort should be made to include women in every single type of activity on the job as well as in the community," she continued.

Dr. Dale Hill, Assistant Professor, University of Houston, stated that there are a number of psychological issues which make it difficult for women to be as visible in an organization as they can be. She says there are now training programs available that can assist women in becoming more competent, assertive and independent.

Dr. Bette Stead, University of Houston Professor, added that both

(Continued on page 2)



ASTP PLAQUE — Cosmonaut Aleksey A. Leonov (left) and Astronaut Thomas P. Stafford display the ASTP commemorative plaque. The two commanders of their respective crews are in the Apollo Command Module trainer in Building 35 at JSC. Two plaques divided into four quarters each will be flown on the mission.

Ed White Center Observes 10th Space Walk Anniversary

The California coastline was becoming visible over the nose of Gemini 4 as Edward H. White drifted out the open hatch to the end of his 25-foot umbilical to become the first American astronaut to make a space walk.

Ed White's 20-minute venture outside the safety of the spacecraft cabin was on June 3, 1965 — ten years ago. Less than two years later, a launch pad flash fire snuffed out the lives of White and his fellow crewmen Virgil I. Grissom and Roger B. Chaffee.

The Ed White Memorial Youth Center in Seabrook will observe the tenth anniversary of White's space walk May 31 with an open house from 1 until 8:30 p.m. The principal speaker will be Astronaut Ron Evans. JSC officials, several of White's fellow astronauts, sports personalities and local business people will also take part in the

open house.

Exhibitions of basketball, judo, volleyball and other games will demonstrate the Center's facilities, and a film of White's space walk will be shown every two hours starting at 2 p.m. A "story time" program about the space walk is planned for children.

Exhibits at the Center's open house will include 15 drawings selected from entries by students in 49 fifth-grade classes in the eight Clear Creek School District elementary schools. The Center's Inspiration Room will display photographs and artifacts from the space program.

A limited-edition silver commemorative medallion will be struck for the White space walk tenth anniversary. Information on the medallion is available from the Seabrook United Methodist Church office.



AWARD — George Abbey recently received the Civil Servant of the Year Award from the Houston Federal Business Association. Presenting the award to Abbey is A. A. Hunter, President of FBA.

LANDSAT May Help Bridge Technological Gap

At a recently held symposium for earth resources in Accra, Ghana, the keynote speaker called on African nations to make use of "accelerating tools" such as LANDSAT for bridging the technological gap between themselves and the developed nations.

Dr. J. Yanney Ewusie, Vice-Chancellor of Ghana's Cape Coast University and chairman of the country's SCOPE program of economic development, said the potential applications of remote sensing techniques to the problems of West Africa are invariably related to earth resources planning and management such as studies of sand-dune movement, land-use mapping, and disease epidemic tracking.

Dr. Ewusie made his remarks at the Conference on Remote Sensing organized by the Council for Scientific and Industrial Research, Ghana, and the United States Information Service, Ghana.

Such remote sensing techniques have already been applied in Kenya for range-land management and environmental land-use mapping for domestic and wild animals. Dr. Ewusie also mentioned that LANDSAT imagery is being used in Ghana for savanna-forest boundary determinations as a result of the recent evaluations of a climate change in the Sahel zone. Botswana planners have also used LANDSAT data for watershed management studies.

The conference brought together technical and government representatives from Ghana, Nigeria, Mali, Cameroun, Zaire, Liberia and Togo for a 3-day problem-solving and idea session on applications of remote sensing data. The U.S. Geological Survey, NASA, the State Department United States Information Service, EARTHSAT and Bendix Corporations all sent representatives to the conference.

Bryan Erb, Large Area Crop Inventory Experiment (LACIE) Project Scientist, and Leo Childs, Earth Observations Division Special Assistant were both at the conference.

Erb and Childs presented an overview of NASA's involvement in

remote sensing and a history of the program here at JSC. In addition, Childs presented technical sessions on the applications of LANDSAT data, particularly in agriculture with emphasis on uses for developing countries.

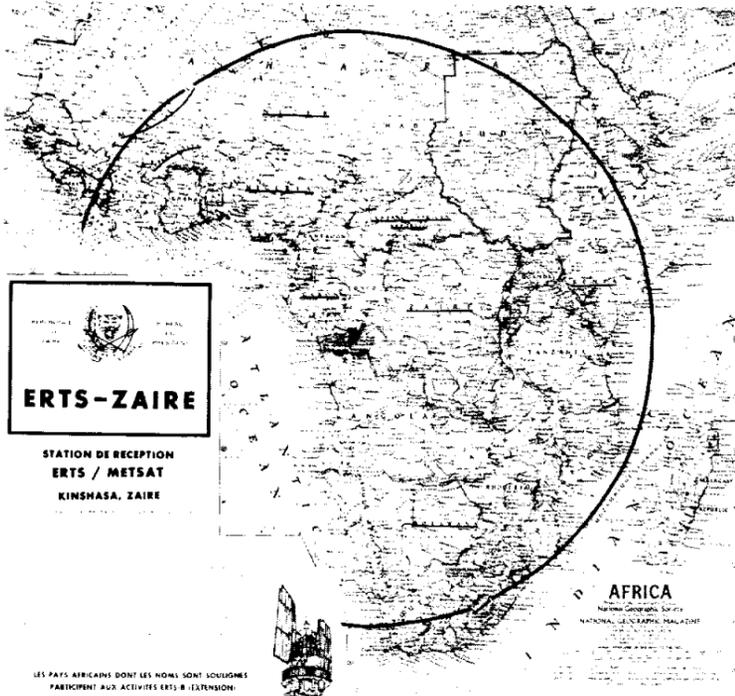
Ghana's Commissioner for Economic Planning, Lt. Col. R.J.A. Felli, stressed the importance of research to the economy of a country and said that in remote sensing the emphasis should concentrate on the country's soil types, forest reserves, and livestock contractions. He added that the planning of feeder roads, the siting of irrigation projects, plantations and large-scale livestock establishments could be greatly assisted by LANDSAT data.

According to Childs, the conferees were "openly receptive in their response to prospective remote sensing programs in their respective countries." Zaire has already signed an agreement for a

LANDSAT ground station to be built near Kinshasa. Zaire received a commendation from the conference for its pioneering efforts.

The representatives made several recommendations at the conference including the establishment by the West African governments of remote sensing departments to acquire and distribute imagery of their respective countries; training of government aerial interpreters to use remote sensing data; and establishment of national committees to determine the best applications and distribution of remote sensing data in expectation of Zaire's forthcoming LANDSAT station.

This is the first of two reports covering recent earth resources conferences held in West Africa. This report covers the conference held at Accra, Ghana, and is a first-hand account as reported to the Roundup by Leo Childs, Special Assistant, Earth Observations Division.



GROUND STATION — This photograph shows the coverage which the Zaire ground station will have when it becomes operational. Within the circle, the ground station will be able to receive data from either LANDSAT I or II.

Last Call For Tennis Lessons

May 28 is the deadline for signing up for the tennis lessons that will be offered at the JSC courts beginning June 2. Beginner, intermediate and advanced lessons will be offered and will consist of one hour sessions twice per week for four weeks. Morning and evening hours are available. A playground is

located next to the courts to accommodate children. Total cost of the lessons is \$30. Call X3594 for more information.

**Take stock in America.
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ABWA Selects Boss of Year

Joseph G. Thibodaux, Jr., Chief, Propulsion and Power Division, JSC, recently was selected "Boss of the Year" by the American Business Women's Association, Clear Lake Area Chapter. Thelma B. Williams, ABWA member, nominated Thibodaux for the honor.

"Mr. Thibodaux is an outstanding boss because of his positive attitude toward his employees." She remarked, "He helps others achieve greater effectiveness and growth in their jobs by encouraging new ideas, initiative and originality in accomplishing tasks."

A native of Napoleonville, Louisiana, Thibodaux graduated from Louisiana State University with a B.A. in chemical engineering. He has 32 years of government service, 29 of which have been in the fields of propulsion and rockets. He has received several awards for special services in these fields and has written over 20 papers and articles on these subjects.

Williams said that Thibodaux

"stands behind" his employees with moral support and takes pride in an employee who has an opportunity to advance, and will take positive steps to help, even though it may mean losing a valuable employee to another organization. She says he encourages equal opportunity for women and other minority groups and served as an EEO counselor at JSC for several years.

She added that his personal interest in employees "tends to form a bond of mutual trust."

"Only in the environment of mutual trust can the potential of each person be realized to the benefit of the organization and its employees. Mr. Thibodaux has indeed created this atmosphere in his organization," she said.

Thibodaux and his wife, the former Mary Jo Goliwas have made substantial contributions in the community by working with children who swim and dive with the Amateur Athletic Union. The Thibodaux's have four children.



BOSS OF YEAR — Pictured above is Joseph G. Thibodaux, Chief, Propulsion and Power Division, JSC. Thibodaux recently was selected "Boss of the Year" by the American Business Women's Association, Clear Lake Area Chapter. He displays a plaque presented to him by ABWA.



SYMPOSIUM — Dr. A. N. Tackie, Executive Chairman, Council for Scientific and Industrial Research, Ghana, addresses members of the Earth Resources symposium in Accra. Seated behind Tackie is the U.S. Ambassador Shirley Temple Black. To the right of Black is the U.S. Information Service Director, Ed Pancoast; and E. Lartyte, Director of the Ghana Institute of Industrial Research.

Goals *(Continued from page 1)*

the success of equal opportunity for women and the success of women in managerial positions depend on continual visible commitment from top management.

Renee Hall, secretary at Ellington Air Force Base, urged women in her field to take advantage of opportunities to magnify their jobs. "Set an upward mobility goal early in your career and work steadily and unremittingly toward that goal."

JSC Director Christopher C. Kraft commented, "Space For Women is a significant milestone in our continuing efforts to advance the status of women in every sphere at the Center. The women at JSC represent one of the Center's most valuable resources — a wealth of diverse talents and professional

skills. It is important that we use these talents and these skills to the maximum extent for the benefit of the space effort."

He added that the Center will continue to expand educational programs and will promote other programs to further enhance the opportunities for women.

Also participating in the program were Federal Women's Program Coordinator, Mary Kerr and Equal Employment Opportunity Officer, Joseph Atkinson.

TICKET CORNER

Tickets available in Building 11 Exchange Store, X5743. SPORTS: Houston Astros Baseball, \$3.15 Reserve, \$4 Box; SPECIAL PLACES OF INTEREST: Sea Arama, year around, adults \$3, children \$2, Disney Magic Kingdom Cards, free, Six Flags Discount Cards, coming soon; DINNER THEATRE, Dean Goss Dinner Theatre, \$16 couple, Windmill Dinner Theatre, \$14 couple, only 20 tickets available, will be on sale through June 4. A zany comedy, starring Joseph Cotton in "The Reluctant Debutante." OTHER ATTRACTIONS, Astroworld, all tickets \$4.50, ABC Interstate Theatre, \$1.50.

BRIDGE CLUB

Effective Monday, May 19, 1975, the Bridge Club meeting night was changed from Thursdays to Mondays. Meeting times are 7:00 P.M. to 10:30 P.M. For information about the club activities call Dave O'Brien, X3164.



ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS



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Roundup Swap-Shop

Swap Shop advertising is available to JSC and on-site contractor personnel. Articles or services must be offered as advertised, without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn: Roundup) by Thursday of the week before publication.

VEHICLES

72 Honda CL350, adult owner, beautiful bike, lug rack, back rest, shop manual, two helmets w/visors, recently tuned, \$625, Thompson, 332-2229.

74 Pontiac LeMans, 2-dr Sedan, xint cndn, \$3,250, 488-3112.

73 4-dr Chevy Impala 454 eng, nw tires, 40 mi, E-Z lift trailer hitch/brakes, 488-3170 or 488-3377 aft 5.

For immediate sale, Honda CB 70, trail or street, xint cndn, 488-0192.

73 Olds 98 4-dr, fully equipped, 20,000 mi, clean 2131 or 334-1764.

Dodge '70 custom van, 318 auto, am/fm stereo, full shag int, mags, burglar alarm system, xint cndn, \$2500, 488-5037.

73 Indian SE 74 1 yr old, orig owner, stripped for off the road use, assec incl, \$275, 488-2182.

74 Pinto Runabout, 3-dr, 2300cc, r/h/alr, a/t, mileage 19.k, Benjamin, 333-2644.

74 Mustang II, 4 cyl, vry gd cndn, vinyl top, Kelly, 481-2707.

Rent Cherokee 235 IFR Trainer, 2 Nav-Comms, DME, ADF, Marker Beacon, autopilot/Nav-tracker, \$28/hr wer, CFII available, 334-1869 aft 6.

71 Honda trail 70, nw tires, eng partially rebuilt, nds work, \$135, 482-7016.

67 Coupe De Ville Cadillac, 2-d, ht, 80 k mi, xtra clean, xint cndn, radial tires, \$795, 941-0489.

73 Olds Cutlass Supreme, auto, air, xint cndn, \$3200, Costello, 474-4576.

Boys 27" Schwinn 10-spd bike, li nw w many accessories, \$90, 482-7858.

Honda CR125, 74, xint cndn, DG pipe, move up w Konis, \$650 or bst ofr, 482-7858.

74 Yamaha MX100A, 21 in, DID, forward mount, S&W rear shocks, xint cndn, \$425, Turner, X5031 or 474-4661.

MISCELLANEOUS

Private swim lessons avail, qual Red Cross Instr, private pool, any age, 10 lessons, \$25, 6321/488-1042.

Sunbeam 18" elec mower, gd cndn, \$35, 488-5077.

Color tv antenna, lead in for UHF and VHF, prfct reception, 488-0192, bargain, cost \$60 new, Polly, 4626.

Golf clubs, full set Wilson, X-31's, irons, woods, gd cndn, \$160, 482-7643.

Two trailer tires, 4 ply, 5:30 x 12, li nw, \$800 ea, 488-2329.

4 ft x 8 ft pool table w balls, cue sticks, wall rack, gd cndn, \$150, Kosel, 6421 or 534-6098.

HOUSEHOLD ARTICLES

Zenith 21" color tv w stand, vry gd cndn, \$140, 488-5077.

Baby bed and mattress, owned by grandmother, seldom used, \$35, 649-8968.

PROPERTY AND RENTALS

Available for lease, 4 BR, 3 B plus study, LR/DR/FR in Nassau Bay. From 8/1/75 to 6/30/76. Fully furnished, \$500/mo, 333-3576.

Lake Rayburn, wooded, Lake access lot, \$5000, all utilities, Colton, 488-2962.

For sale or lease, townhouse, 3-2, Queens Court, Nassau Bay, all conveniences, must close soon, Hughes, 5326 or 333-2287.

BOATS

18 ft glass magic, cabin, head, 75 hp Johnson o/b, galv tilt, trailer xint cndn, Huber, 334-3245.

Sell or trade, 15 yr-old, fiberglass runabout, 45 horse eng, trailer, \$250 or fiberglass canoe, 534-2437.

100 hp Merc outboard, trailer, 17 1/2' Fiberglass boat, \$800, gd running cndn, Taylor, 488-3591 or x3036.

19 ft fiberglass deep V 101 hp IO, trailer, cutty cabin w head, many xtras, gd cndn, \$3460 firm, 1-925-3654.

PETS

AKC cairn terrier, 10-mos-old, brindle, shots, 2131 or 334-1764 aft 5.

Registered Irish setter, male, some training, xint pet, 4 yrs old, \$125, 482-7016.

Wanted: good home for beautiful female cat, loving and gentle, cat has been spayed, \$15, 488-0192.

Cocker spaniel pups, blond males, \$100-\$125, 482-7858.

American Staffordshire terrier pup, black female, free to good home, 488-3128.

WANTED

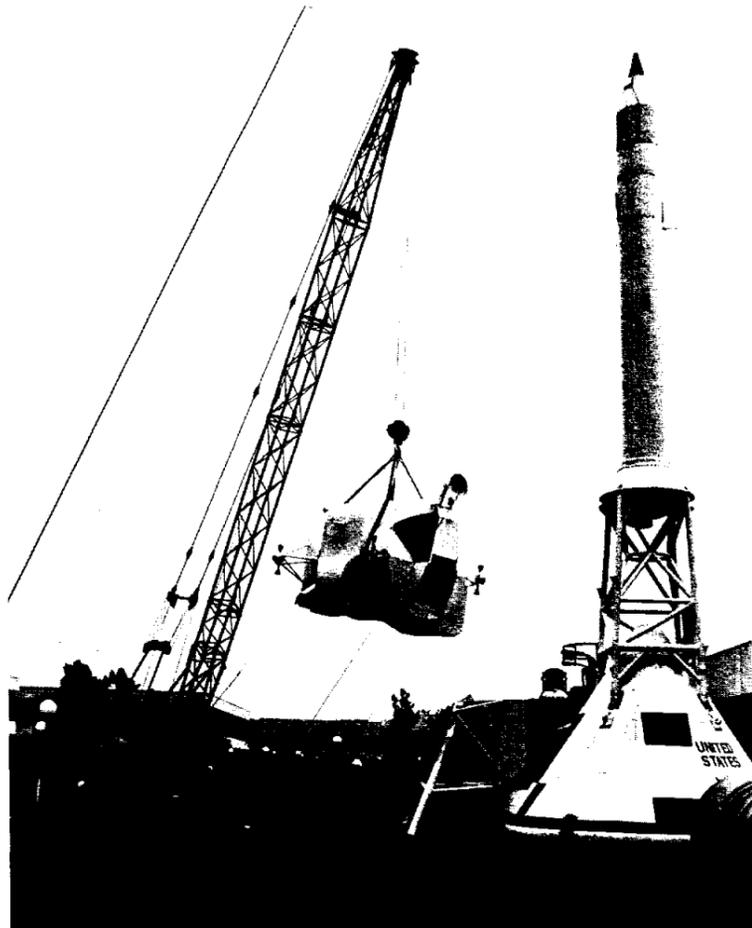
Used depth finders, working or not w transducers or transducers alone, Norman, 2123 or 471-3709 aft 5.

Large workbench vise and a 2 drawer file cabinet, 474-3961, Allgeier.

Carpool space available, one or two members to join established carpool meeting in the vicinity of Gulf freeway/Parkplace circle, 8:30-5, Giralda, x4643 or Johnson, x5028.

Used refrigerator, Stonesifer, 482-7643.

Want to rent car top luggage carrier, must be 3 ft wide by 4 ft long, zip canvas cover to fit 73 Chevelle sta wgn, June 28-July 13, Brenton, 2634.



LM REMOVED - The Lunar Module mockup which has graced the exhibit area near Building 2 since 1967 recently was disassembled and carried away from the Center. The years and "rough weather" finally took their toll on the module, but fond memories attached to it will live on.

LM Removed: Memories Remain

By Betsy Godfrey

The weather and the years finally took their toll on the outdoor Lunar Module (LM) Mockup, familiar to JSC employees and tourists alike.

For the past two weeks, the display area beside Building 2 has had an empty space where the LM had stood since 1967. Chuck Biggs of the Public Affairs Office said the module was disassembled because "it couldn't take another season of rough weather" such as is predominant at this time of the year.

The LM was built for display purposes at the Marshall Space Flight Center in 1966. The first major display of the module was at the Paris Air Show during that same year. It was next seen at the 1967 World's Fair in Montreal, Canada.

At the closing of the fair the LM was flown to Houston and put on display here at JSC. It has been seen by more than five million visitors to the Center and has been photographed by many of them. It has also been the center of attention for several historic incidents including a Presidential visit here.

When President Nixon came to JSC to participate in the Apollo 13 Awards Ceremony, the speakers

stand was erected on the grass behind the LM. Because the back of the LM faced the audience, it was decided that that module should be turned around. The movers hoped that they could simply jack it up onto wheels and turn it around. However, when they jacked up the first leg, the entire structure collapsed.

The incident occurred the day before the President was to arrive and caused "some mild consternation" about what action should be taken to remedy the situation. The solution was to bring in a temporary replacement of a similar mockup which was being used for training elsewhere on the site. After a repair job the original was returned to its position, and all went well.

Coincidentally, the crew from the rigging department who disassembled the LM and carted it away were many of the same men who assembled the module for display in 1967.

Somewhere there is a heap of scrap which remains an object of history that has weathered many seasons and has awed many tourists.

Sometimes It Pays To "Think Small"

Most people are encouraged to always "think big"; however, there are some instances where it pays to "think small" -- especially where businesses are concerned.

JSC Small Business Specialist H. T. "Chris" Christman stated, "Although small business helps to maintain the industrial capacity of this country's major prime contractors, acting in partnership with them and performing more than half of the services as subcontractors and suppliers for these major concerns, they also have individual strengths that engineers, scientists and technical personnel

should be aware of and utilize."

Christman maintains that small businesses have a "specific and unique approach to products, processes, services or disciplines in which they specialize; have a depth of experience and detailed understanding in their specialized areas; react quickly and accurately to specific time changes; and exemplify concern for their customer's requirements."

"There are many small business opportunities to be found throughout NASA and JSC and we urge all Center personnel to review their requisitions and make recommenda-

tions to obtain requirements from a small business," Christman said. "Small business is the heart of free enterprise; America needs it to survive and grow," he continued.

BETTER BUY BETTER U.S. SAVINGS BONDS - A Proud Way to Save.

ASTP Countdown

Apollo and Soyuz flight controllers and crewmen have this week completed another series of joint simulations in preparation for the July flight.

United States representatives of the five working groups and NASA management officials for ASTP are in the Soviet Union for meetings and the Flight Readiness Review.

A trip by members of the working group for mission plans and operations will be made to the Soviet Union in early June to work out final details for the ASTP mission.

Flight controllers and Apollo crewmen will in the coming weeks perform a series of simulations including launch, rendezvous, orbital operations, docking and undocking, docking module checkout, and entry.

Additionally, the flight controllers will support network simulations and various pad tests of the ASTP launch vehicle and spacecraft at Kennedy Space Center.

Apollo crewmen will continue Russian language study, briefings on various portions of the mission, participate in bench checks and monitor tests of the spacecraft and launch vehicle, in addition to taking part in simulations.

The final joint simulations with crew and controllers is scheduled to begin on June 30.

Small Business Week

A Proclamation

Small business has been a vital part of American life from the very beginning. The colonial traders, craftsmen and merchants of two centuries ago have been replaced by an enormous range of dealers in goods and services of all kinds, but the original opportunity, and the determination to excel, remain. Small business in America is still the free enterprise system's gateway to opportunity - the means by which millions of Americans continue to build a better life for themselves and their families.

Out of the estimated 9.7 million businesses in America today, more than 9 million are small. They account for nearly half of the gross business product and more than half of the business labor force. Our American success story could never have been achieved, and would not continue, without this impressive contribution by small business.

NOW, THEREFORE, I GERALD R. FORD, President of the United States of America, do hereby designate the week beginning May 25, 1975, as Small Business Week. I ask all Americans to share with me during this week a solemn pride in the great achievements of our Nation's small business men and women, and in the contributions they have made to our free way of life...

Gerald R. Ford



the SPIN-OFF
from a small
saving could be

ECO
ASTRONOMICAL

you'll be TOPS

when you send your REACT cards to...
BH4 - COST REDUCTION OFFICE



ASTP NEWS CONFERENCE — Cosmonaut Vladimir A. Shatalov (center), Chief of Cosmonaut Training for the USSR, answers questions at an ASTP press conference at JSC. Astronaut Thomas P. Stafford (left), took part in the conference also. Interpreter Anatole Forostenko is on the right.

No Language Barriers (Continued from page 1)

gives Russia a wide range of emphasis and subtlety of meaning, as well as an abundant capacity for warm human expression.

Proselyted words caused one interpreter some momentary embarrassment during a joint technical meeting on crew procedures when he interpreted a Soviet engineer as having said: "The crewman will then remove his diving suit and dry it before stowing it behind the Soyuz couch."

In the pressure of the meeting, the interpreter translated the Russian *skafandr* (spacesuit) into the definition of the French *scaphandre* (diving suit), from which the word was borrowed.

While most interpreter duties in the months leading up to the July mission have been in joint technical and planning meetings in Houston and Moscow, the interpreters will have varied assignments during the actual flight.

Sixteen interpreters will work closely in Mission Control Center-Houston in three shifts with the project technical director, flight director, communications technicians and public affairs commentators.

The Natasha who interprets for U.S. Flight Director Pete Frank will be somewhat more serious minded than the flighty Natasha Rostova of *War and Peace* as she translates conversations between Frank and his Soviet counterpart Yeliseyev in the Moscow Flight Control Center.

In addition to the interpreter staff, four Russian language instructors drawn from three American universities have been teaching Russian to Apollo crewmen Thomas P. Stafford, Vance D. Brand and Donald K. Slayton for an average of six hours a day, with emphasis on conversational phrases peculiar to the experiments and joint operations planned for the flight. Soyuz crewmen Aleksey Leonov and Valeriy Kubasov are likewise studying English.

Russian language instruction for

the Apollo crew will continue until the crew goes into medical isolation 21 days before launch. Each crew will speak the other's language in radio communication during joint phases on the nine-day flight.

Mark Twain once wrote that he "would rather decline two drinks than one German adjective." He likely would have made a stronger comment had he encountered the highly inflected Russian language, with its three genders and six cases that hang endings on almost every noun, pronoun, verb and adjective. English dropped most of its inflected endings several hundred years ago.

The Cyrillic alphabet of the Russian language has several characters that have the same sound value as

similar characters in the Latin alphabet, while other letters look the same but have different sound values. The apparent similarity caused one ASTP staffer — who shall remain nameless — during an early visit to Moscow to say: "Hey I can read that sign; it says 'Pectopah!'" What he read was *PECTOPAH*, which transliterates to *restoran* — or restaurant.

His Soviet colleagues took delight in asking him at which Moscow "pectopah" he wanted to eat that night, or if he planned to open a chain of "pectopahs" back in the U.S. "Pectopah" was hard to live down for the rest of the visit and has become a vernacular word related to NASA delegations' visits to the U.S.S.R.

Hurricane (Continued from page 1)

ated in Building 30 and preparations for site shutdown are initiated. All preparations will be directed from the Command Post.

When a decision to evacuate employees is made, buildings will be secured by the Center's guards and employees will be released at staggered intervals to avoid traffic jams. "It is imperative that supervisors and employees observe release time intervals and follow guidance of traffic patrolmen in order that evacuation may be accomplished effectively," stated Bert Smith, JSC Emergency Preparedness Officer.

During imminent hurricane conditions, employees will be able to obtain information on storm status and JSC preparations by dialing 483-6281 for a recording on hurricane conditions. The onsite closed circuit TV systems will also transmit a map showing hurricane location and conditions. Smith urges that these information sources be used in lieu of direct inquiry to "cognizant offices."

If employees are released due to severe weather conditions, they will be expected to report for duty the

following regular duty day unless otherwise advised.

The Emergency Planning Representatives of each major JSC organization will handle all coordination with the Hurricane Command Post. Employees should direct any specific inquiries to these individuals whose names are available from their Organization or from Bert Smith, 483-4441.

Smith commented that the extent of death and destruction caused by hurricanes is well documented in the U.S. and particularly in the Gulf Coast area. "Equally well documented is the fact that these disasters can be significantly reduced when advance planning and realistic preparation for hurricanes has occurred and good communication channels have been established," he said.

Smith encourages employees to consider their own personal circumstances and residential locations during the Hurricane Season and to formulate a personal emergency plan. "With the season officially beginning in June, the preparation time is now!" he remarked.

Low Addresses Aviation/Space Writers

George M. Low, deputy administrator for NASA told a gathering of aerospace writers in Dallas on May 6 that the Apollo Soyuz Test Project "has become a truly significant cooperative venture."

Speaking at the 37th annual meeting of the Aviation/Space Writers Association, Low said "Contrary to some allegations, there is no technology transfer or giveaway in ASTP. Apollo, designed to go to the moon, was necessarily more sophisticated than Soyuz, designed as an earth-orbital craft. But the project has been so structured, with its emphasis on operations rather than design or development, that the Soviets learn no more about Apollo than they already knew from our published literature, and certainly nothing about manufacturing and the like."

"The new system — the docking system — was itself jointly designed, with each side contributing as much as the other, but even the new system was independently manufactured in its own way by each side. What is important is that

we are learning how to work together, how to cooperate on a most complex project where the final report card will be visible to all. This first step should open the door for many more cooperative efforts so that we might jointly share some of the tasks — and the costs — of the exploration of space," he said.

Low told the gathering of about

100 writers "There is a great and exciting future in space. We will explore the unknown to gain fundamental new knowledge about the past, present and future of the universe, and about humanity's place in it. We will apply what we learn in space, and what we can do from space to enhance the quality and security of life on earth."

Texas Bus Lines Initiates Service

Beginning May 15, Texas Bus Lines will initiate daily round trip service to and from JSC, departing Continental Trailways Bus Terminal, 1116 McKinney, and Greyhound Bus Lines Terminal, 1410 Texas Avenue.

Arrival times at JSC are arranged to coincide with the Center's guided tours scheduled for 10:00 a.m. and 1:15 p.m., and departure times from JSC are scheduled so that a visitor can take a complete guided tour. The schedule is as follows: Depart Houston, 8:50 a.m. (Continental) 9:00 a.m. Grey-

hound, arrive JSC 9:45 a.m.; Depart Houston, 11:50 a.m. (Greyhound) 12:01 p.m. (Continental), arrive JSC 12:45 p.m.; Depart Houston 2:05 p.m. (Greyhound) 2:15 p.m. (Continental), arrive JSC 3:00 p.m.

JSC to Houston, Depart JSC 10:00 a.m., arrive Houston, 10:50 a.m. (Continental), 11:00 a.m. (Greyhound); Depart JSC 1:15 p.m., arrive Houston, 2:00 p.m. (Greyhound), 2:10 p.m. (Continental); Depart JSC 3:15 p.m., arrive Houston, 4:00 p.m. (Greyhound), 4:10 p.m. (Continental).



ASTP MCC ACTIVITY — M. P. Frank, senior American flight director for the joint U.S.-USSR ASTP mission, mans his console in the Mission Operations Control Room in the Mission Control Center during ASTP simulation activity at JSC. He is flanked by two American Russian language interpreters, Ms. Natalie Latter (left) and Ms. Tamara Holmes. The ASTP docking in Earth orbit mission is scheduled for July.

Throughout NASA

TROPHY

Gerald R. Carr recently accepted the Robert H. Goddard Memorial Trophy from President Gerald R. Ford on behalf of all the crews of the three Skylab manned missions. The trophy, a bust of Dr. Goddard, Father of American Rocketry, is awarded annually by the National Space Club.

FREON THREAT

NASA has begun a broad program of stratospheric research to determine the effects of natural and manmade pollutants on Earth's ozone radiation shield.

A major part of the effort will be devoted to assessing the threat posed by the release of gases used as refrigerants and in aerosol spray cans. These are commonly called Freons, a trade name.

NASA will use its capability in airborne measurements to find out how much of these compounds and their decomposition products have already reached the upper atmosphere. This includes use of NASA's highflying U-2 aircraft, balloons and sounding rockets and satellites.

URANUS MISSION

NASA is inviting scientists to propose experiments for a 1979 space mission to Uranus, third farthest planet from the Sun. According to an announcement of opportunity released this week, the flight would use a Mariner-type spacecraft to fly past Jupiter and then continue on to Uranus and the

far reaches of the solar system.

The flyby would provide man with his first closeup look at the distant planet — a mammoth ball of poisonous gases, spinning on its side, one of the most bizarre planets in the solar system.

INVESTIGATION

A NASA satellite, Navy weathermen and an experienced Coast Guard ship and crew teamed up to aid the National Science Foundation in a recent investigation of a marine route to a remote part of Antarctica previously inaccessible by sea. NSF's interest was prompted by questions concerning the practicability of future scientific research in the area. The region, to be studied, called the Pine Island Bay — recently was reached for the first time by sea by the Coast Guard cutter, *Burton Island*, with guidance by Navy weathermen.

First Tuesday

The next film in a series shown for the benefit of JSC employees on the first Tuesday of each month, will begin at 12:15 p.m. June 3 in the Building 2 Auditorium. This film, "Aeronautics", shows the technical problems of flight, and the operational problems of commercial and private aviation that need to be solved and the areas of research that NASA will conduct during the 1970's.